

# THE MOTOR AGE

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## MOTOR-OMNIBUS LINES

THE POSSIBILITIES OF MOTOR-VEHICLES IN INTER-URBAN PASSENGER TRANSPORTATION COMPARED WITH TROLLEY LINES—CONCLUSIVE EVIDENCE THAT AUTOMOBILE LINES COULD BE MADE TO PAY IN MANY PLACES WHERE RAILWAY LINES WOULD FAIL—COMPARISONS OF FIRST COST, MAINTAINANCE AND OPERATING EXPENSES

In order to ascertain the approximate possibilities of motor-vehicle transportation of passengers between small towns, where the need of a regular means of communication is felt but where there is not the prospect of sufficient traffic to justify the installation of a trolley line—the usually adopted system—a representative of the Motor Age sought an authority on this method of transportation to ascertain the cost of installation and maintenance of such a line.

### Loth to Talk

The authority was loth to talk, when he learned the purpose for which the information was sought, but was finally induced to give approximate figures, for

a hypothetical case, and, once started, became sufficiently interested to enter into a lively discussion of the matter.

After prefacing his remarks with the statement of the very evident fact that no figures approaching accuracy as to cost could be given, except in individual cases, and that even then there would be a great variation, according to the varying cost of labor and material, he gave, at the instance of the Motor Age representative, figures for the approximate cost of installing a five-mile trolley line over a fairly level road.

### Cost of Trolley Line

"The total cost of such a line," he said, "would not be less than \$15,000 a mile,

including a small power plant such as would be needed for such a road. This would provide a single track with the necessary turn-outs, built of sixty pound T-rails, and employing ordinary wooden trolley posts. The use of heavier rails or iron posts would not be economical for a small road of this class.

"In addition to this the cars would cost in the neighborhood of \$6,000 each. Fully equipped with motors, etc. This is for forty foot cars capable of carrying thirty-sixty to forty passengers each. For a small line between two towns, two cars would be all that would be needed. In such cases the cars run at a rate of twenty-five to thirty miles an hour. You see that it would be entirely feasible to have a car make the round trip in forty minutes, allowing for the necessary stops, or to have a car start from each end of the line every twenty minutes.

#### Running Expenses

"The running expense of trolley cars is usually reckoned at a trifle more than \$15 a day per car, but this is on roads where there are a great many more cars. For a line of this class the expense would be \$18 per day or more, according to the cost of labor and fuel. The cost of labor in one place will sometimes vary as much as 100 percent over the cost in another and the cost of fuel in one place will sometimes be three times as great as in another.

#### Maintenance a Big Item

"The cost of maintenance? Well, the usual basis on which maintenance of lines of this class is figured is that the line will have to be completely renewed every eight years, and the cars about as often, or, in other words, the cost of maintenance is about 12½ percent on the original investment."

It will be seen from these figures that the installation and maintenance of a trolley road of the nature outlined would represent an investment of more than \$366,000, figuring that the cost of maintenance to be \$12,375 a year or the interest on \$279,000 at 4½ percent per annum, to which is added the first cost of \$75,000 for the road and \$12,000 for the cars.

The maximum carrying capacity of the

two cars on this line, each making a one-way trip in twenty minutes, would be, 2,880 passengers a day for a twelve-hour day. The interest at 4½ percent on \$325,000 would represent a little more than \$45 per day, to which must be added the running expense of \$18 per day, or a total expense of \$63 per day. At a fare of five cents per single trip the road would have to carry an average of more than forty-five percent of its maximum capacity—an unheard-of proportion—in order to merely meet expenses.

It will be seen that at the rate of thirty miles an hour, the trolley car, in making twenty-minute trips over its five-mile route would be traveling but half the time, or at rest for half the time. During each twenty-minute trip, then, each trolley car would be traveling ten minutes and resting ten minutes.

#### About Motor-Omnibuses

Assuming that an attempt be made to render the same service by means of motor-omnibuses, it will readily be seen that the time for rest for the 'bus need be no longer than for the trolley. Assuming that the 'buses travel at just half the speed of the trolley, or fifteen miles an hour, it will be seen that one 'bus will require twenty minutes of travel to cover the same route, and, adding to this the ten minutes rest, the 'bus will make a single trip in thirty minutes as against twenty for the trolley car.

#### Requires More Buses

Obviously, then, it will require three 'buses to make as many trips as two trolley cars. But, assuming that the 'buses have but half the carrying capacity of the cars, or twenty passengers each, then it will be seen that it will require six 'buses to carry the same number of passengers as two trolley cars. The difference in time required to make a trip would be fairly offset by the 'buses running three times as frequently.

#### Help Required

To operate the trolley line would require, at the minimum, the services of one engineer and one fireman, at the power house, and a driver and a conductor for each car, besides a general elec-

trician and a road man, or a total of eight employees. One driver for each 'bus and one engineer, to look after the mechanism of the six would be all that would be necessary for this 'bus line, or a total of seven, at, say, an aggregate cost of \$14 per day. Assuming that the cost for motive power be \$2 per day each for the 'buses—figuring 12-3 cents per mile—a total cost would be \$26 per day for the 'buses, as against \$18 for the cars.

#### Comparison of Cost

Taking the cost of the 'buses at \$5,000 each—a high figure—the total expense of original investment would represent \$30,000 against \$87,000 for the trolley line—and for the same amount of service. Taking the useful life of the 'buses, in constant service, at only five years, gives a maintenance cost of \$6,000 a year as against \$12,375 for the trolley. This \$6,000 would represent the interest on an investment of \$133,333 at 4½ per cent. Add to this the initial cost of \$30,000 and we have an investment for the motor-omnibus system of less than \$164,000 as against an investment of \$366,000 for the trolley line considerably under one-half.

#### Other Advantages

This, however, does not begin to represent all the advantages of the 'bus system. In the first place, in case the system did not prove a paying investment there would be only \$30,000 sunk instead of \$87,000, and the entire equipment could be moved to a field where it would prove profitable. The investors would not be under the necessity of inaugurating the system with the entire six 'buses. Indeed it is more than likely that one or two would be tried in an experimental way, at first, and, if they proved profitable, the number would be increased as traffic requirements demanded.

#### Easy to Curtail Expenses

Granting that, in the case of either the trolley or 'bus line, the investment should prove profitable, it would be far easier, with six vehicles, to curtail expenses at times when traffic was light by laying off any part of them. That would reduce the cost for help and for fuel in almost exact proportion to the number

of vehicles laid off. In addition to this, such withdrawal from service would lengthen the life of the 'buses to a very considerable extent.

#### Cost Only One-Third

Taking all these things into consideration, it is not unreasonable to assume that a motor omnibus system, under certain conditions of moderate travel, could be installed, maintained and run at an outlay of about one-third that required for a trolley line, and could, consequently, be operated where a trolley line would be a dismal failure, or run in opposition to a trolley line where the travel was not great. As to the possibilities of motor-omnibus lines in direct competition with rail-carried, electric traction where there are a large number of passengers to be carried, there is little data from which to figure. In the foregoing the maximum expense for motor-omnibuses has been given and the moderate estimate for the trolley system.

#### Concerning the Road

So far it has been assumed that the two points to be joined by a traffic line are already connected by a fairly good road. Where such is not the case, the very best sort of stone road could be built for less than it would cost to build a cheap trolley line and the road could be maintained for less, far less, than the trolley line. A road that would be good enough for the purposes of a line of 'buses could be constructed for a cost of \$5,000 to \$8,000 a mile and maintained in good repair at a cost of from \$300 to \$500 per year.

It will be seen, therefore, that even if it were necessary to construct a road on which the 'buses might run, the investment required would still be less than for a trolley line. Such investment would doubtless be willingly shared by the communities through whose territory the line passed and there would be few cases where the entire length of road would have to be built.

#### Freight Might be Carried

No attempt has been made, in the foregoing, to show what sort of earnings might be expected of a road of this char-

acter, the object being merely to compare the cost and operating expenses of the trolley and motor-omnibus in territories where the use of the trolley as a means of making money, is still a debatable question. Neither has the subject of the handling of freight been considered, although it is quite as feasible to handle freight in connection with a motor-omnibus passenger service as it is in connection with a trolley passenger system, which is very generally done, to the profit of the road.

#### Admits the Economy

The authority previously quoted, after the figures already given had been outlined to him, readily admitted that motor-omnibus lines would be entirely practical in many cases where trolley lines could not be made to pay.

"I do not think, however," he said, "that any sort of traction that does not run on rails and that does produce, or carry in condensed form, its own motive power, will ever be a competitor for railways of any description. The production of power in quantities is the only economical way to produce it, and the resistance to traction on rails is so much less than on the best of roads, that, for regularly carrying large numbers of people, there can scarcely be a comparison.

#### Another Field of Usefulness

"I can readily see, however, that there are cases where motor-vehicles would be far more economical than trolley cars. I can also see where they could be used to great advantage in connection with trolley lines. There are many trolley roads that feel the need of feeders and yet find that there is not enough traffic to justify the building of branch lines. The motor-omnibus is the very thing to fill the want. It would be particularly economical where storage batteries were used, as the

company could charge the batteries at a minimum cost.

#### Adapted to Summer Traffic

"There are many places, too, which furnish passengers during only a few months each year, such as summer resorts and watering places. There are many such places where the traffic is large enough, if it lasted throughout the year, to make the installation of a trolley line a paying investment but which do not furnish enough traffic during the summer months to justify the building of a line that must, of necessity, lie idle eight or nine months in the year. In such cases, lines of motor-omnibuses could be used in connection with the regular trolley lines, to advantage, and, when the season was over, the buses could doubtless be utilized elsewhere, or, if not, they could be safely stored and there would be far less loss than with the trolley line.

#### Does Not Fear Competition

"Yes, there is no doubt a great field for motor-omnibuses. I have no doubt that they will prove a great factor in cities, too, but not in direct competition with the street railway lines. It will be their province to operate in the residence streets where it is impossible to get franchises to lay tracks. They could cater to a class of people who, perhaps, would be willing as well as able to pay more for the service, than the street car lines charge.

#### "The Gentleman's Conveyance"

"It seems to me that the motor-vehicle is, and will continue to be, for some years, at all events, a sort of gentlemen's conveyance, something that compares to the street car and horse drawn vehicle, as the Pullman car compares to the ordinary day coach. As far as I am concerned, I do not fear any sharp competition from this class of vehicles—certainly not for many years."



## AT THE HUB OF THE INDUSTRY

LABOR UNION AT BOSTON DESIRES TO IMPOSE ONEROUS BURDENS ON MOTOR-OMNIBUS COMPANIES—GREAT ACTIVITY SHOWN AMONG MANUFACTURERS OF AUTOMOBILES—A NUMBER OF NEW CONCERNS

Boston, Jan. 13.—And now the labor unions have taken a shy at the Boston Transit Company and incidentally made themselves ridiculous. At the last meeting of the delegates to the Central Labor Union, which is the junction body of all the allied trades of the city, the C. L. U. proposed that the transit company be made to pay for the privilege of using the streets for its motor 'bus service.

The delegates contend that such corporations as the transit company could not be facts unless the people maintained by taxation suitable streets for vehicles. In view of this major premise, the delegates took the position that politicians giving corporations of this kind franchises without compensation should be shelved, and the following characteristic resolution was adopted unanimously, which will probably be the end of it:

### The Resolutions

"Whereas, The automobile company (meaning the New England Electric Vehicle & Transportation Co.) have secured various privileges from the city government without compensation to the city; and

"Whereas, This company should not have been given special privileges; therefore, be it

"Resolved, That the municipal and state legislative committees endeavor to have a proper charge made for these privileges."

Yet the "automobile company" is taxed by the city just as others using the streets are, on its property, and it is hardly likely that any additional tax will be levied. If this were carried out to its logical conclusion, every street would have a toll gate for foot and carriage passengers.

### Automobile Express Line

An automobile express line between Boston and Lawrence, about thirty miles away, is the very latest thing in Massachusetts. The Stanley people of Law-

rence are behind it and have petitioned the state for legislation to incorporate the Farmers' & Suburban Jobbing Co., with a capital not to exceed \$25,000. The incorporators are William C. Odlin of Andover and S. C. Stanley of Lawrence. Mr. Odlin, who is a member of the state house of representatives, has introduced the bill, which provides that three months after the corporation has its vehicles in operation it shall pay one cent a mile for each mile run by its vehicles over the streets and highways of the commonwealth, the amount of such mileage to be paid to the treasurer of each city or town through which its through vehicles run. Settlement for such tolls is to be made yearly.

### Right Asked by Company

For this the bill, if made an act, will give the company the exclusive right to carry small parcels, goods, merchandise, freight, mails and passengers by means of motor vehicles over a specified route from Atlantic Avenue, Boston, to a point on Broadway, Lawrence. The corporation is to have no exclusive rights except on the streets named. The bill will be acted upon later by the legislature.

### A New Concern

The Shaw Motor Vehicle Co. has just been organized here under the Maine laws to build steam wagons. The officers are C. M. Martin, president; Henry F. Shaw, vice-president; W. G. Nixon, treasurer, and C. L. Marston, clerk. The company will use a steam engine under Mr. Shaw's patents, but has not yet secured a factory. It has one carriage almost ready for exhibition.

### Another New Company

Another steam carriage company which is a little further along is the Pilgrim Motor Vehicle Co., with offices at 12 School Street, and a factory at Somerville. The officers are Elmer N. Hutchins,

president; B. Alden Prince, treasurer; Edward L. Orcutt, general manager, and William M. McDonald, business manager. Mr. Orcutt claims to have completely eliminated the steam trail. How he does it will be told in the Motor Age as soon as his patent has been allowed.

#### Rotary Motor Co.

The Rotary Motor Vehicle Co. of this city is working hard to get some sample carriages out. The company believes firmly in the principle that "carriages on the street" are the best evidences of progress and prosperity and is bending all its energies to turning out motors and practical carriages. As the company is not in need of money, it is having a reasonable measure of success and the first carriage is promised within a few weeks.

#### Stanleys Are Active

The Stanley brothers of Newton—F. E. and F. O.—of steamboat fame, are said to be planning greater things in the motive line. Their contract with the Locomobile Co. of America expires May 1, after which time they will be at liberty to work out their own plans. These include another factory and the building of heavier models of steam carriages, more suited to the rough American roads. The Stanleys also feel somewhat disappointed that their machines are barred from the international cup race by the weight limit of 400 kilograms.

The Turbine Motor Co. has given up experimenting with rotary motors and is now drawing plans to use a reciprocating motor with a moving cylinder. "We have one motor finished at Avon," says Treasurer French, "and expect to have a carriage ready for inspection soon."

#### Waltham Company Busy

Kenneth A. Skinner, the Waltham Mfg. Co.'s expert, is now in Paris attending to the shipment of de Dion motors to Waltham. The demand for the Orient machines is so great that the company is away behind its orders and Manager Gash has given orders that not a single racing man shall be allowed to enter the factory. They all want to get motor tandems for nothing, while the beloved public is metaphorically waving bunches of money in its motor madness.

With one carriage successfully run-

ning, the American Power Carriage Co. will soon be in a position to take orders. The corporation is very close, the incorporators being Wallace Hight, president; S. M. Nichols, treasurer, and G. E. Gray, R. H. Schacht, and F. L. Fritchey. The system will be gasoline explosion and the carriage will be very light, weighing but 350 pounds. Special attention has been paid to baggage carrying capacity. The carriage will have its own dynamo for the sparking current and for lighting purposes. The first carriage, which appears rough in its present state, is now in the hands of a carriage painter, and will be placed where the public can see it as soon as he has finished with it. In trials, a speed of twenty-five miles an hour has been obtained, while the clutch is so sensitive that it has been sent across the factory floor at a snail's pace, while the motor shaft was turning at more than 750 revolutions.

This company is a firm advocate of "carriages on the road" before spreading itself publicly, and, as there is no stock for sale, the indications are that it is not troubled by the need of money. Orders for fifteen or more carriages are already in and the company is doing its best to get a factory.

#### Another Steam Vehicle

The Porter Motor Co. is another incorporation of the week, under Maine laws. The office is 950 Tremont building, this city. The incorporators are Major D. Porter of New York, inventor of the Porter electric motor, president; Dr. Abner T. Wells, vice-president; Dalton Fallon, treasurer. The company promises to build a thoroughly practical steam wagon for pleasure and business purposes, using either gasoline or kerosene as fuel. The first carriage, a runabout, is now running.

#### Claims a Perfect Burner

Major Porter declares that he has secured perfect combustion even of kerosene in a specially devised burner, with an air draft but half an inch in diameter. He claims that the cost of running is but about one-half cent a mile at fifteen miles an hour over ordinary roads. A tubular boiler with 350 half-inch copper tubes is used. The boiler is square, 14 inches each way, and 16 inches high.

The tubes are horizontal and the boiler is divided into three compartments to give the required circulation. The steam drum and separator are combined. The boiler furnishes enough steam for a six or eight horse-power engine. The fuel is controlled by the familiar diaphragm connected with a valve in the supply pipe. The water supply is controlled by a new device which is claimed to be entirely automatic and reliable. Major Porter says it is a new departure in boiler feeding for which patents are pending.

#### Aluminoid Compartments

The under portion of the carriage is divided into compartments and the fuel is carried in an aluminoid compartment under from three to five pounds air pressure. The burner has been thoroughly tested under trying conditions and is going through the patent office. The fuel and water will last for sixty miles of ordinary running on one supply. The water is carried in compartments like the fuel.

The engine is a balanced, oscillating, two-cylinder, single-acting machine.

#### Automatic Control

The steering and controlling functions not automatic are all gathered on the steering lever and grip. A small lever on the steering grip controls the throttle, so that when the hand is removed for any cause the throttle is closed.

The carriage weighs 600 pounds, all on, and has seats for two. Steam can be raised from cold water to 150 pounds in from five to seven minutes. The working pressure is 150 pounds. The boiler has been tested to 1,000 pounds and is fitted with a safety valve set at 200 pounds.

The company is now negotiating for a factory within a mile of the business section of the city. It is 100 by 35 feet, four stories high and well fitted for building motor carriages.

#### Experimental Truck

The Cunningham Engineering Co. has completed and tried a steam truck, which, although declared by the inventor to be merely experimental, has carried a load of two and one-half tons over three miles. It is now in the shop being fitted with a larger boiler. Coal is used as fuel. The steering is done by a small steam engine, which works a worm in mesh with the

periphery of the gear in the axis of the fifth wheel. All four wheels are used for traction, the forward sprocket being kept in a vertically longitudinal plane by guides, whatever the angle of the axle. This is accomplished by circular teeth over which the sprocket fits. The engine of the present truck is of the marine type.

#### Big Order for Delivery Wagons

The New England Electric Vehicle Co. has closed a contract with one of the big commercial houses for twenty-five delivery wagons, to be put into commission as soon as they can be completed at Hartford.

Royal Sheldon, owner of the Palace Theatre, has one of the few Eaton electric carriages out. The company is using a chloride battery. It is working quietly in the factory at the South End to get a supply of wagons on hand, so that when the spring demand comes it will be in a position to meet it.

#### Another Big Company

Wellington P. Kidder, owner of the Kidder Press, has formed The Kidder Motor Vehicle Co. to manufacture steam carriages, with a capital stock of \$5,000,000. At a meeting in New Haven, Conn., Thursday evening, the following were elected officers: President, T. Attwater Barnes, New Haven; vice-president, Hon. C. C. Colby, Quebec; directors, T. A. Barnes, C. C. Colby and Elisha M. Morgan, Springfield, Mass.; James W. Wirten, Dover, Del.; S. Stevens, Quebec, and W. P. Kidder, Boston. The new plant will be commenced within six weeks and between \$40,000 and \$50,000 worth of machinery has already been ordered.

Mr. Kidder has built two steam wagons from his own designs and the second worked so satisfactorily that he succeeded in interesting other capitalists. He himself is worth a fortune.

#### Another Omnibus Line

The National Transportation Co., which has a franchise to run steam omnibuses in Winthrop, a summer residential district, and in other sections of the suburbs beyond present electric lines, has been reorganized. J. Fred Beaty, who has been the manager, is out of the company and President J. H. Behneke is in charge. The first steam omnibus is practically completed in Henderson's carriage shops in Cambridge.

## GLEANINGS FROM THE PATENT OFFICE

### FRENCH'S VEHICLE FRAME

No. 641,096, to Tom French, Andover, Me.—There is no doubt about it. Tom has grasped the idea of what is necessary in a vehicle frame, and, while he will doubtless find, before he gets through building vehicles, if he keeps at it long, that he will have to provide more in the



Figure 4.



Figure 5.

way of springs at the rear of his vehicle than he shows in his patent specifications, he still gives as clear a description of means designed to overcome a difficulty as often emanate from the patent office.

Fig. 1 is a sectional side elevation of the improvement on the line 11 in Fig. 2. Fig. 2 is a plain view of the same. Fig. 3 is a front end elevation of the same. Fig. 4 is an enlarged cross-section of the ball-and-socket joint between the front axle and one of the reaches, the section being on the line 4 4 in Fig. 2. Fig. 5 is a sectional side elevation of the same on the line 5 5 in Fig. 4. Fig. 6 is an enlarged cross-section of the rear axle and the ball-and-socket joints thereon, the section being on the line 6 6 in Fig. 2; and Fig. 7 is an enlarged sectional side ele-

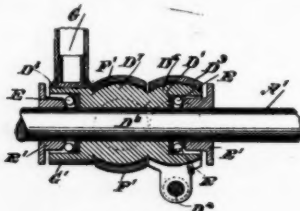


Figure 6.

vation of the sliding connection between the triangular frame and the front axle, the section being on the line 7 7 in Fig. 2.

The vehicle is provided with a front

axle A and a rear axle A1, carrying front and rear wheels B B1, respectively, and of any approved construction. The front and rear axles A A1, are connected with each other by reaches C, arranged at an angle to each other, as plainly indicated in Fig. 2, with a ball-and-socket joint D connecting the front end of a reach with the front axle A and a similar ball-and-socket joint D1 connecting the rear end of a reach with the rear axle A1.

As shown in Fig. 4, each ball-and-socket joint D is provided with a ball D2, secured on the axle A and upon which fits a socket D3, preferably an integral part of the corresponding reach, the socket being split at the lower portion and flanged, a bolt D4 connecting the flanges with each other, as will be readily understood by reference to Figs. 4 and 5. The ball and socket D1 for the rear end of



Figure 7.

each reach is provided with a ball D5, formed on the bearing D6, journaled on balls E, held on cones E1, secured to the rear axle A1, as is plainly shown in Fig. 6. The bearing D6 is provided with a second ball D7 and with a hub D8 for purposes hereinafter more fully described, it being understood that the ball D5 is engaged by the socket D9 of the rear end of a reach, and this socket D9 is similar to the front socket D3 above mentioned and referred to in detail in Figs. 4 and 5.

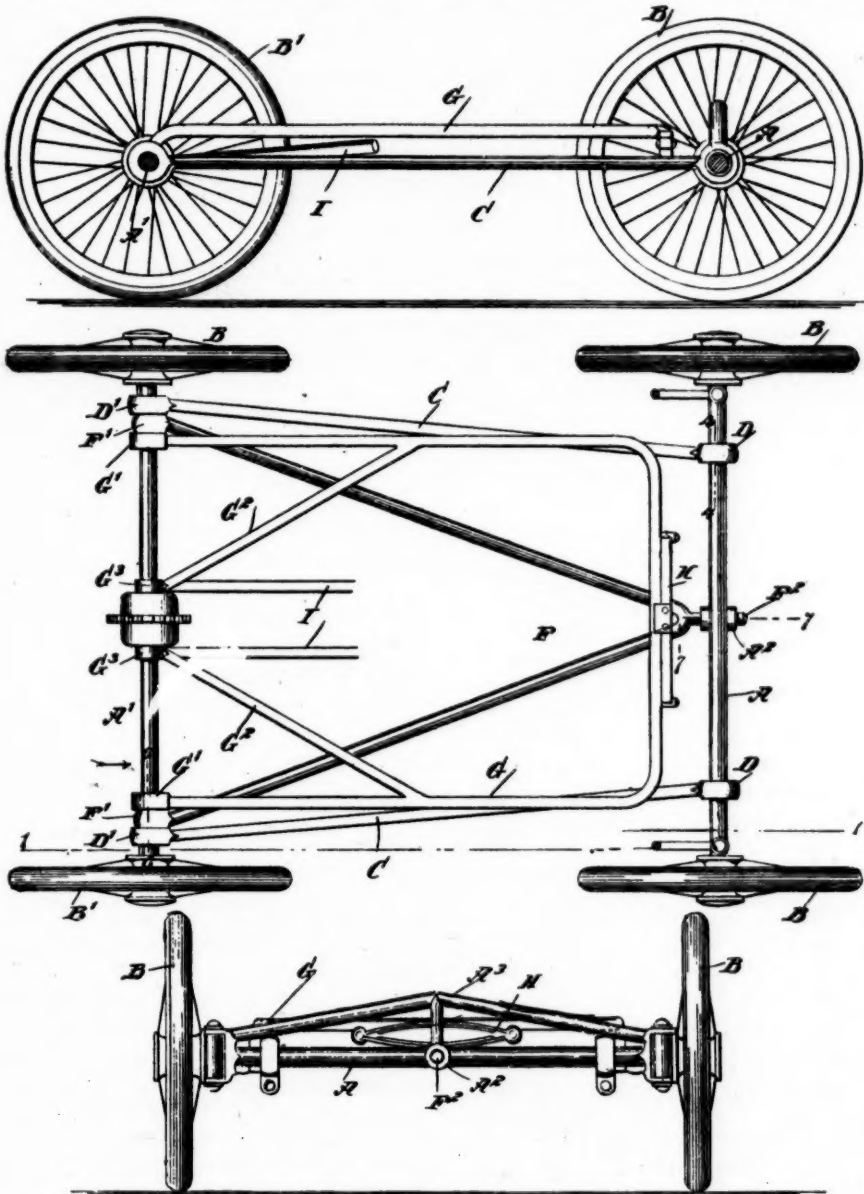
A triangular supporting-frame F is provided at its base ends with sockets F1, engaging the balls D7 of the two bearings D6 on the rear axle A1, and the front apex end of said triangular frame F is formed with a longitudinally-extending pin F2, mounted to slide in a bearing A2, forming part of the front axle A, at the middle thereof, said front axle being



preferably strengthened at the middle by a truss A3, as is plainly shown in Fig. 3.

Above the triangular or supporting frame F is arranged a bearing or body frame G for carrying the vehicle-body

resting on the triangular frame F. The rear ends of the frame G are formed with sockets G1, engaging in hubs D8, previously mentioned, and forming integral parts of the bearings D6, journaled on



FIGURES 1, 2 AND 3.

and the motor for driving the rear axle A1 in the usual manner and by suitable gearing, and this body-frame G is supported at its front end on springs H,

the rear axle A1. The rear ends of the body-frame G are provided with braces G2, connected with hubs G3, engaging the rear axles, and from said hubs lead

parallel rods I, connected with the motor-shaft for keeping the same in true alignment with the rear axle, so that a transmission of power from the motor to the rear axle is true and uniform at all times notwithstanding the vehicle may pass over rough roads and considerable jarring and jolting result therefrom.

By arranging the triangular frame in the manner described a sliding connection is had with the front axle A, and a relatively fixed connection is had with the rear axle A1 to keep the wheels B1 always in line and at the same time allow the front wheels B to readily pass over obstructions in the roadway without displacement of the connected parts, especially as the ball and socket joints of the triangular frame with the rear axle permit slight angular movement of the frame F. In a similar manner the other ball-joints at the rear axle—that is, those connected with the reaches C and the frame G—permit sufficient motion of the latter to avoid all jolting and jarring incident to the wheels passing over rough roads, so that easy riding is insured to the occupants, and the motor is not liable to be thrown out of alignment with the axle.

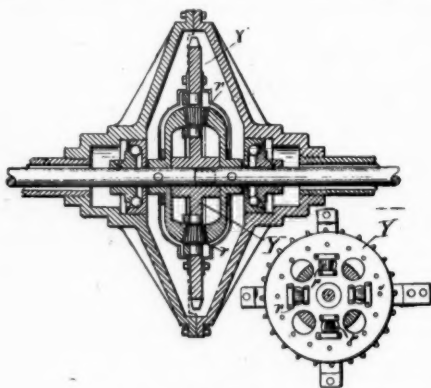
Tom has secured nine claims on his construction of which the first is as follows:

"In a vehicle, front and rear axles, reaches having ball and socket joint connections with the said front and rear axles and a frame having ball and socket joint connection with the rear axle and a longitudinal sliding connection with the front axle, substantially as shown and described."

#### GRAY'S COMPENSATING GEAR

No. 641,204, to Emmet P. Gray, Cincinnati, Ohio, assignor of two-thirds to Otto Armledger, same place.—Otto got fooled when he advanced money for this patent for there is not one of the five complicated claims allowed that is worth the paper on which it is printed. There are six sheets of drawings and no less than twenty-six figures. The only feature of the whole invention in which there is any possible real merit and novelty, is the arrangement of the different gearing and

the means by which the power is transmitted through it. A glance at the accompanying drawings will reveal the construction—power transmitted to a



sprocket wheel Y in which are rotably set the small bevel pinions r of the differential gear, the wheels of course actuating the large bevel pinion members on the divided axle in the usual manner.

#### SCHNOOR'S WIERD VEHICLE

No. 641,043, to B. J. A. Schnoor, Holstein, Ia., assignor of one-half to Henry Martensen, same place.—This is one of that class of weird, uncanny productions which the salary-drawing representatives of this majestic government permit to pass under the name of patent. Mr. Schooner—no! Mr. Schnoor—has heard or read that it is desirable to propel automobiles by means of all four traction wheels and he tries to do it—on paper, for by all the laws of mechanics his vehicle could never be made to run elsewhere. His paper omnibus is certainly a weird affair.

He "prefers" to employ a two-cylinder vapor motor with cylinders, as shown in the drawings, about a yard apart, and also "prefers" that these motors be reversing. The engines will probably run—on paper—at a speed of not less than 500 revolutions a minute. Nevertheless Mr. Schooner—no! Mr. Schnoor—fails to gear down the speed and the vehicle will run—on paper—at a speed of more than a mile a minute, judging from the size of the wheels. Knowing that the rear wheels of motor-vehicles are provided with

means of differentiation, he provided a clutch on the revolving rear axle which permits one or both of the rear wheels to run free when going around corners. But the front wheels are also driven and he quite overlooks the fact that means for differentiation should in that case, be provided for them.

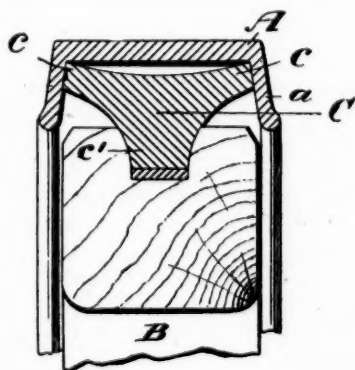
The great feature of the "invention" is the means of driving these front wheels. Having two engines, in order to use one or both, as occasion demands, he gears them both to the rear axle by means of two chains and four sprocket wheels, and then transmits the power to the front wheels by means of four pair of bevel gear wheels, four universal joints and two telescoping shafts. Of course he might have used one engine to drive the front wheels and one to drive the rear ones but that would have been less complicated.

Six worthless claims are allowed.

#### MITCHELL'S TIRE

No. 640,927, to Robert Mitchell, jr., Glasgow, Scotland.—A tire and a poor one. The following claim, one of two, with the illustration, shows the construction:

"The combination of the externally-grooved felly B, the channeled metal tire A having flange a, a, embracing the sides



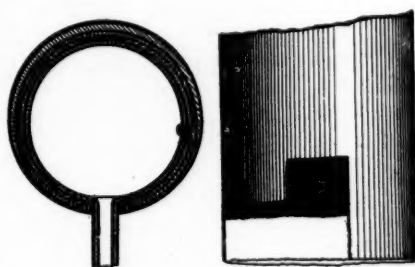
of said felly and the rubber tire C having an outer butt portion c fitting laterally in the internal channel of the tire A without filling the entire cavity of the channel, and an inwardly-projecting

flange c fitting the groove of the felly, substantially as set forth."

#### SIEBERLING'S TIRE

No. 641,153, to Frank A. Sieberling, Akron, Ohio.—Two claims are allowed for this patent. In describing the object of this invention Mr. Sieberling says:

"Difficulty has been experienced in prolonging the life of a tire from a creeping of the different layers of the tube,



which results in causing them to wear rapidly internally as well as externally. The object of my invention is to overcome this difficulty and prolong the life of the tire, and another object is to provide a tire of peculiar strength and durability."

The novelty of the tire consists in constructing it in the manner usual to single tube pneumatics, with an inner tube vulcanized to a surrounding rubber-soaked layer of canvas and an outer shoe similarly vulcanized to an inner layer of rubber-soaked canvas, but—and herein lies the novelty—the two layers of canvas are not vulcanized together, making a single tube tire that is not a single tube tire. It is not a bad guess to say that Mr. Sieberling, who is an experienced rubber man, had an idea of producing something that would be an evasion of the Tillinghast patent if the latter is finally sustained. The first claim reads as follows:

"An improved pneumatic tire consisting of an inner endless closed tube of rubber with an outer adhering layer of fabric, and an outer endless closed tube of rubber with an inner adhering layer of fabric, said tubes being of like outline in

section, said fabric layers being arranged to lie against each other without cohering, and all simultaneously vulcanized, substantially as described."

### SIMONS' TIRE

No. 640,821, to Jacob A. S. Simons, New York City.—Mr. S. says, in his specifications, that the object of his invention is to provide a pneumatic tire that does not require to be inflated—in other words



a cushion tire. If he has put in valves and inflated the tire, he might have something of value. The first of the two claims allowed, together with the cut will show the construction with sufficient clearness. The claim reads:

"A rim for wheels provided in its outer side with two peripheral grooves, and a central outwardly-directed annular portion, the outer surface of which is concave in cross-section, and tire composed of a tube, the inner perimeter of which is turned or folded inwardly so as to form side portions which are mounted in said grooves, and a central tubular

portion mounted in the outer inner fold of the outer portion and resting on the outwardly-directed central portion of the rim, substantially as shown and described."

### BIRDSALL'S TIRE

No. 640,863, to Edgar M. Birdsall, Buffalo, N. Y., assignor to De Witt H. Bothwell, Toledo, Ohio.—This is one of the numerous patents on sectional tires. The object of the invention is to provide means for securely retaining the solid rubber sections in the sockets provided for them. As shown in the accompanying cuts the sections of rubber are provided with projections designed to fit into recesses in the sockets. A number of variations of the device is shown. Four claims are allowed of which the following is the first:

"In a sectional elastic tire, the combination with a socket or holder adapt-



ed to be secured to a wheel rim or felly, of an elastic block arranged in said socket, one of said parts being provided in its sides with a number of independent lugs or projections which interlock with corresponding recesses formed in the other part, substantially as set forth."





## NEWS OF THE TRADE

### COMPANY FOR OVERMAN

Springfield, Mass., Jan. 15.—The Overman automobile gave a fine exemplification, last Friday, of the progress that has been made in overcoming resistance by snow. About five inches of snow fell Thursday night, accompanied by a heavy rain, which badly handicapped traffic. Mr. Overman's motor vehicle was run throughout the day on both city and country roads and did not once meet an insurmountable obstacle. Even to the casual observer it was evident that the automobile covered the ground much more easily than the vehicles which depended upon the horse for motive power.

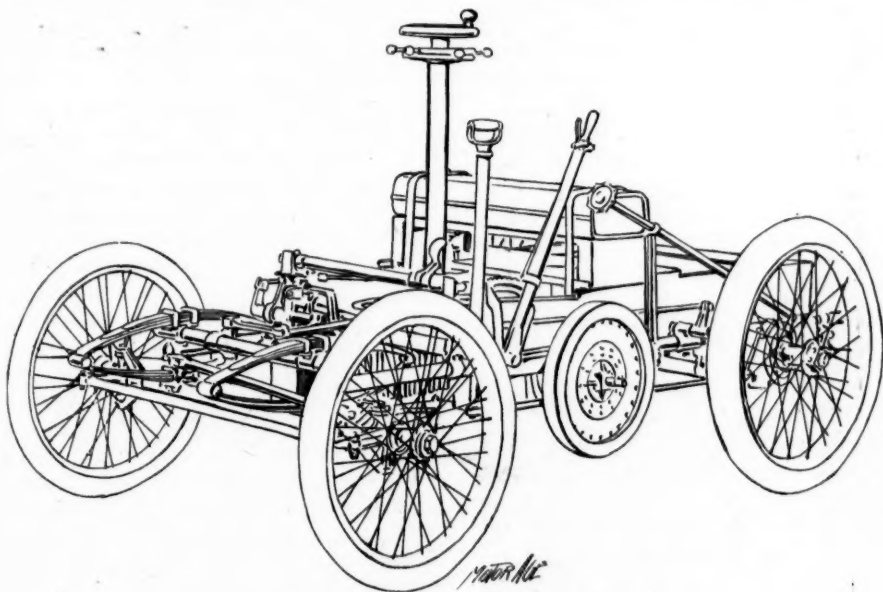
A. H. Overman is authority for the statement that a company will soon be organized for the construction of the Overman automobile. It is expected that the vehicles will be ready for delivery the coming season. It is not at all certain that the construction work will be done at the plant of the Overman Wheel Company, in Chicopee Falls, as good offers have been received to locate elsewhere.

The company at the outset will devote rather more attention to heavy vehicles, such as drays and cabs, than to pleasure conveyances, though the latter will by no means be overlooked. The motive power will be steam.

### FRENCH ADOPT AMERICAN STYLE

The accompanying illustrations show, first, the running gear and motor mechanism, and, second, the complete vehicle, termed the "Duc," manufactured by A. Darracq et Cie, one of the largest of the French manufacturers of motor-carriages.

All the Darracq vehicles utilize a single-cylinder Leon Bollee explosive motor, rated at full five horse-power and cooled by means of radial fans, at that. The steering and control of the motors are both governed by means of two hand wheels on the same standard, as will be seen by reference to the illustrations, and the braking is done by a lever at the extreme left, while the reversing is effected through the spade grip between the two other controlling devices. Be-

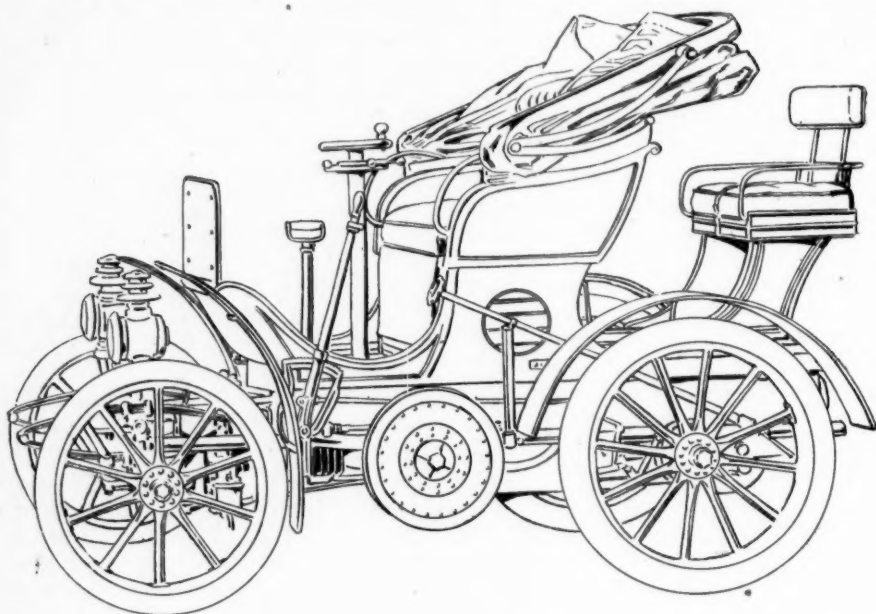


RUNNING GEAR OF DARRACQ VEHICLE.

sides this, two treadles are provided, one to throw the vehicle out of gear only, and the other to throw it out of gear and brake at the same time.

In the complete carriage shown, the rear seat, for footman, is removable.

the heart of the fashionable residence district of the national capital, will be under the direction of F. E. Foster, an experienced man. Not only will a full line of the various types of vehicles made by the company be carried in stock,



"DUC" DARRACQ.

The folding top can be wholly detached. In addition to this type, five other different styles of body, with seats for from two to six persons, are fitted to the same running gear. The firm is about to introduce still another form of body and desire to adopt an American coach body. To this end correspondence is being carried on with the United States for the purpose of obtaining the complete bodies here.

The firm also builds motorcycles and is one of the largest French manufacturers of bicycles and bicycle parts.

#### ENCOURAGING FOR WASHINGTON

Washington, Jan. 13.—The first practical step toward the exploitation of motor vehicles in this city has just been taken by the Locomobile Co. of America in the opening of a salesroom and repository on Connecticut Avenue. This new establishment, which is located in

but a carriage repository will also be a prominent feature of the business. In the latter department vehicles purchased from the company will be taken on storage and kept in running order for the convenience of patrons. Under this system a patron of the company can, after finishing with a vehicle, telephone for a man to run it back to the repository, where it will be cleaned and put in readiness for the call of its owner.

Manager Foster has been doing considerable missionary work of late and has awakened great interest in the locomobile by taking out prominent Washingtonians on trips about the city. Among those who have enjoyed Mr. Foster's hospitality are Baron Pauncefoot, the British ambassador, the Chinese minister, Speaker Henderson, and many others. The Chinese minister, Wu Ting Fang, is very enthusiastic over automobiles, and summed up his first experience with one in the following words: "There is an ex-

hilaration from the swift motion surpassing that of any other form of movement."

Within the next few days the Washington Electric Vehicle Co., the local offshoot of the Columbia & Electric Vehicle Co., will commence operations in this city. The company has secured a large building on Fifteenth Street for its central station and extensive improvements are now under way. The building is to have a circular rink for practicing with the vehicles and the training of the operators. W. T. Headley, an electrical expert of New York, who will be the general manager of the local concern, is now in the city superintending the work of fitting up the central station.

#### NEW 'BUS LINE FOR NEW YORK

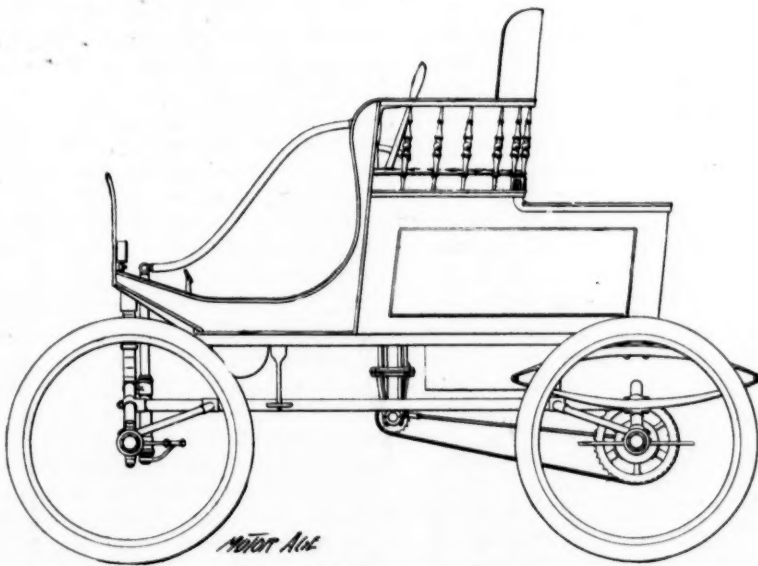
New York, Jan. 13.—Cyrus Field Judson, president of the General Carriage Co., to-night announced that the company would next week put into public service in New York 200 carriages and 100 omnibuses. "The conveyances will be operated, some by electricity, others by air power, and still others by gasoline," said Mr. Judson. "We intend to enter into direct competition with the surface-car system. We shall make a very low rate of fare, probably three

cents for 'buses and twenty-five cents a mile for cabs."

#### MILWAUKEE AUTOMOBILE

Milwaukee, Wis., Jan. 13.—The Milwaukee Automobile Co. was formed as the result of careful study by the present officers of the company. The object of that study was to produce the simplest form of self-propelled vehicle. To quote President Starkweather: "We tried to avoid everything radical in our vehicle, leaving, as far as possible, the experimenting to the other fellows. We felt certain that the average individual wanted something that he could understand, rather than an affair he was afraid to trust, even in the hands of an expert."

The accompanying illustration gives a fair idea of the style of vehicle to which the company is, at present, giving its attention and of which there are now three in process of construction. It is a one-seated Stanhope runabout, driven by steam, generated in a strong, standard, copper, fire-tube boiler, twelve inches high and eighteen in diameter and containing 213 tubes. The boiler is regulated automatically. The gasoline fuel is carried in a tank of a capacity of 3.7



MILWAUKEE STEAM AUTOMOBILE.

gallons, situated under the foot-board. The water tank has a capacity of fifteen gallons and surrounds the boiler. The exhaust passes through this tank. The engine is of the vertical, two-cylinder, marine type and runs at the rate of about 400 revolutions per minute at its highest efficiency, claimed to be between six and seven-horse power. The power is transmitted by chain to the rear axle and gives the vehicle a minimum speed of twenty-five miles an hour. It will travel ten miles on one gallon of gasoline and carries sufficient fuel and water in the tanks for forty miles without replenishing.

The vehicle has a wheel-base of fifty-eight inches and is fitted with twenty-eight-inch wheels, equipped with 2½-inch pneumatic tires. The running gear is made of seamless steel tubing with drop-forged connections throughout. The

frame is braced and provision is made for allowing the wheels to adapt themselves to the inequalities of the road.

The operator sits on the right hand of the vehicle, steering with his left hand and controlling the steam valve and brake with the right hand and foot, respectively. He also has the reverse lever and pump valve within easy reach, while the water glass and steam gauge are conveniently located for occasional inspection. Owing to the automatic regulation the operator is required to attend only to the steering and throttle valve.

The factory of the company is located at Nineteenth Street and St. Paul Avenue. It is well equipped for turning out the product rapidly, after the first 100 come through. The officers of the company are W. H. Starkweather, president; J. B. Dousman, treasurer; W. S. Starkweather, secretary and superintendent.

## FIRST PERMIT FOR LADY

New York, Jan. 13.—Miss Florence E. Woods, the daughter of C. E. Woods of the Woods Motor Vehicle Co. of Chicago, who enjoys the unique distinction of being the only woman allowed to operate an automobile in Central Park, permitted a Mail and Express reporter to accompany her on her afternoon excursion yesterday afternoon and learn for himself that a woman may guide a flying automobile upon crowded Fifth Avenue and among the woodland nooks and broad driveways of Central Park.

Between 2 and 4 o'clock of an afternoon Miss Woods is in the habit of riding out in her horseless vehicle, and her permit to enter Central Park is certainly a diploma for skill—as President Clausen and Secretary Holly are exacting critics upon the handling of automobiles.

Miss Woods' automobile is stabled on West Eighteenth Street, and an interested crowd always collects when she and her vehicle appear upon the street. The young automobilist first became skillful in Chicago, her home. Her father, Mr.

Clinton E. Woods, taught her to manage the machine.

"I learned to handle the vehicles in about fifteen minutes," said Miss Woods. "It is one of the simplest things in the world if the driver keeps his wits about him."

With a jingle of the bell somewhere beneath the lap-robe, the audience of curious persons was swiftly left behind, and Miss Woods turned up Fifth Avenue with a more graceful sweep than ever a horse-drawn carriage made.

In and about among the wagons, trucks and carriages wound the 900-pound run-about, passing all—passed by none. At the crossings the sharp warning of the bell told pedestrians to beware, and then, with a motion of the little lever at her side, Miss Woods sent her auto' jumping ahead again. All along the avenue much interest was manifested. New York no longer stares at the average motor carriage, but an attractive young woman driving a graceful self-propelled run-about is not a usual sight.



Hardly a liveried coachman passed who did not stare at Miss Woods and her carriage, and in most cases the gaze might be read as one of decided disapproval.

"I think they realize that many women may soon be running their own automobiles," said Miss Woods, smiling, "and that coachmen's services may not always be so necessary. Certainly very few of them approve of me. They try to crowd me all they can, as a rule, and seem to be in great hopes of getting me in a tight place. I know from experience, however, that I can get around in a crowd where horses are almost useless."

Miss Woods verified this remark at the Forty-second Street crossing on Fifth Avenue by maneuvering among the other vehicles as a torpedo boat might run about a fleet of ponderous battleships.

Several cabmen did not seem to like the automobile with its young driver to pass them with such apparent ease, and endeavored to crowd ahead, but Miss Woods, with a little pull at the lever, invariably made them "take her dust," as David Harum might have said.

When the automobile crossed the plaza and entered the Western Drive, a policeman examined Miss Woods' permit. Then the most delightful part of the drive began.

Up hill and down dale sped the run-about, only occasionally slowing down or turning aside in deference to some oversuspicious horse. The ball-bearings in the wheels made coasting down the hills an easy matter, and when an incline came the lever sent the carriage along as no considerate driver would attempt to send a horse.

"One beauty of it is that it never gets

tired," said Miss Woods. "I don't have to go any slower up hill than I do down, and I can pass everyone. One does not realize how fast one is going in an automobile. When I am going at my lowest speed, which is four miles an hour, I am keeping well along with the carriages on Fifth Avenue, and at eight miles an hour I pass them all. For special occasions, sudden spurts and dodging about, I sometimes use the sixteen-mile notch; but I seldom, if ever, run as fast as that in the city streets. I'll show you how it is." Just ahead was a clear strip of road, and the automobile leaped forward at a pace that seemed like that of an express train.

It was noticeable throughout the drive that horses took to the vehicle very kindly. In a few cases ears were pricked up, but none shied.

"I think that the Park Board is wise in taking these precautions," Miss Woods said. "Although no horses that I have passed have ever given much trouble on account of my machine, a good many of them seem to be a little bit afraid of it. I am careful about this, and approach them slowly when they seem afraid."

Miss Woods, with her seventeen summers, is probably the youngest automobilist in the country. She is of about medium height, with bright expressive gray eyes and brown hair. She has plenty of self-possession and a clear head. She said that she had always been afraid of horses and had never driven them. "I get a great deal of pleasure out of my auto", and never shall become tired of it. I have run all kinds of motor vehicles, from heavy Stanhopes to my little run-about, and one is as easily handled as another."

## MINOR NEWS AND COMMENT

### ALDERMAN WANTS FENDERS

Alderman Blake of Chicago has introduced into the city council an ordinance requiring all automobiles using the streets of the city to be fitted with fenders similar to those used on the street

cars. The introduction of the ordinance was not the cause for any display of wild enthusiasm on the part of the city fathers and would probably prove a still born child, if left to itself. The daily papers, however, have taken the matter up and

gathered the opinions of the makers and users of vehicles, which, naturally, are not favorable to the ordinance.

The Inter-Ocean says: "Makers, sellers, and operators of automobiles in Chicago are of the opinion that Alderman Blake's proposed ordinance compelling the use of fenders, basket type, on all automobiles, is a good one, providing it be amended so as to include horses, pedestrians weighing more than 180 pounds, and Beamish's goat. If this is done, automobile people will find no great objection to the law."

In the course of an editorial the Tribune has the following: "Instead of killing the automobile industry by compelling owners of these vehicles to equip them with fenders, the council should direct its energies toward securing the adoption of a uniform and adequate brake system that will enable motormen to bring them to a short stop upon all kinds of pavements.

"There is no necessity for equipping automobiles with fenders if the proper rules regulating speed and brakes are enforced by the city. The automobile cannot be classed with street cars as a conveyance. It does not run on fixed tracks, but is easily guided in all directions. It is at all times—or should be—under better control than a horse or a bicycle. The council does not require fenders on horses or bicycles. If the speed of the automobile is limited to eight miles an hour and it is equipped with proper brakes, it is not dangerous to pedestrians. Moreover, people who buy automobiles would dispense with them and go back to horses before they would disfigure them with such unsightly attachments as fenders."

The other papers have taken a similar stand. It is a foregone conclusion that the ordinance will never be reported by the committee to which it was referred, in its present form. It may be brought up in such shape that its provisions will apply to the provision of adequate brakes instead of fenders.

#### AKRON PATROL WAGON

Akron, O., Jan. 13.—The automobile patrol wagon built by the city of Akron and

said to be the first manufactured was put into actual service yesterday. It is much like ordinary covered patrol wagons in appearance. It weighs 5,500 pounds and is equipped with two four-horse power motors. Its maximum speed is twenty miles an hour. The wagon cost \$2,300. F. F. Loomis, the city mechanical engineer, having charge of construction. City officials estimate that the horseless patrol will pay for itself in four years by the saving of feed bills and horseshoeing. In a test the new vehicle ran through deep mud and up and down hill easily.

#### ALLEGED AUTOMOBILE CENSUS

A Parisian newspaper has conducted what it claims to have been an exhaustive inquiry to ascertain the total number of automobiles now in use in the world. The following is given as the result: Automobiles registered in Paris, 3,701; in the suburbs of Paris, 1,219; in the rest of France, 2,445; in the whole of Germany, 1,427; in the whole of England, 530; in the United States, less than 300.

Le Velo questions the accuracy of the figures, as well it may, if the number of vehicles credited to the United States is a fair sample of the accuracy of the figures for vehicles in other countries. There are at least 150 individuals and firms in the United States that have built one or more vehicles, some of them a great many.

#### OPENING IN JAVA

"This," says Consul Sidney B. Everett, writing from Batavia, Java, "is the very finest kind of a country for automobiles, as the roads are good and, owing to the bad climate, the wear and tear on horseflesh is very great. At present there are only two in the island—of what make I do not know. I am convinced that it would pay to introduce them. An active and capable agent should be sent out, who could spend some time in giving exhibitions and showing people what a saving of horseflesh there would be. Power is cheap, as water is abundant and fuel and labor reasonable in price. The attempt should be made, and I shall be very glad to answer any inquiries in this

regard which our manufacturers may desire to make."

#### PARIS DISPLAY OF AUTOS

The Parisian cycle and automobile exhibit—"Le Salon du Cycle de la Salle Wagram"—was confined, as far as the automobile portion of it went, to motorcycles and "voiturettes," or light vehicles, all heavy ones or those for more than two passengers being excluded. The exhibition contained nothing of decided novelty. There were shown a vast number of motors of various types, with various methods of carburation, different cooling devices and different arrangements of valves, but all on the same general order. There was a multitude of motorcycles on exhibit and a goodly number of light carriages, among the latter being the Stanley steam runabout, exhibited by the American Automobile & Motor Co. This vehicle, according to La Locomotion Automobile, attracted attention for its elegance.

#### CLEVELAND OMNIBUS

A motor-omnibus has just been completed at Cleveland and is expected to be in operation in a short time. It is said to be the largest self-propelled vehicle in the world. It is owned by the former street car strikers, and will be operated under the auspices of the strikers in opposition to the Big Consolidated Street Car Company.

The new carrier is 22½ feet long, and looks much like a street car. It has a seating capacity of 30 persons. It is equipped with a thirty-horse power gasoline engine. The car can be geared up to any required speed. Cleveland men are inventors of the car.

If the automobile proves a success officials of the company say financial backing to the amount of \$350,000 has already been promised.

King George of Greece, on his recent visit to Paris, annexed to his stable an auto.

# The Solar

Carriage  
and  
Automobile

# Lamps

ARE NOT AN UNTRIED EXPERIMENT.  
BUT A PROVED SUCCESS.

**T**HESE lamps have the same system of generation and the same principle of construction which have won such unparalleled success for the "time-tried" SOLAR bicycle lamp.

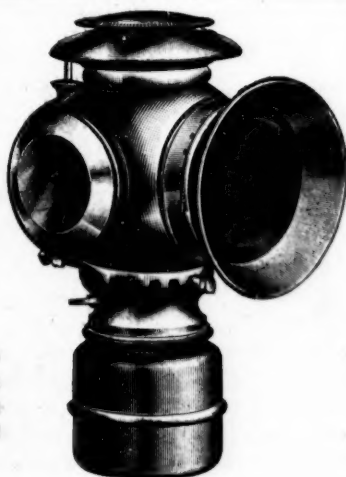
The Only Safe and Satisfactory

## Acetylene Carriage and Automobile Lamp

Made of extra heavy gauge brass; double convex ground glass lens, with reflector and perfect focus, giving a clear field of light.

Made and absolutely guaranteed by the largest acetylene lamp makers in the world.

**BADGER BRASS MFG. COMPANY** \* Kenosha, Wis.



# PRESTON Puncture-Proof Tire

A marvelous new invention, by which tires for bicycles, automobiles, and carriages are woven like firehose—in a single piece—but with a reinforcement upon the under side, so that the tube is nearly twice as thick in a bicycle tire, and as many times as thick as may be desired in an automobile tire, where it comes in contact with the ground.



The **Preston Tire** excels all others in resiliency, being made on the principle of an elliptic spring on a carriage, combining strength and capacity for wear. For racing machines

its greater lightness and its absolute safety make it excel all others. At a public test made in the presence of a thousand spectators in Boston, Mass., where the surface of a floor for fifty feet was covered with

**Broken glass, cinders, oyster shells, and strips of cloth and leather through which numberless tacks and nails had been driven and laid with points up,**

while no other tire could be ridden over this floor for more than two feet without bursting, a bicycle equipped with the

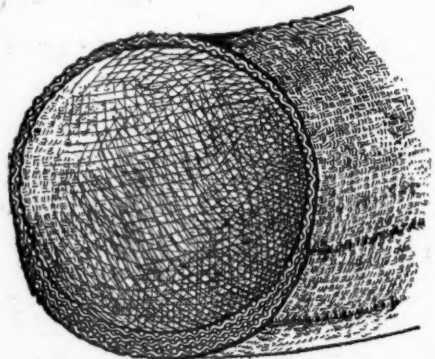
## PRESTON PUNCTURE-PROOF TIRES

was ridden back and forth for half an hour by a man weighing 180 pounds, without the slightest suggestion of a puncture.

The "life" of an automobile tire made in the ordinary way is very limited. The **Preston Tire** is still good after a year's wear.

These tires are now ready to be placed upon the market for the 1900 trade for all vehicles.

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